

1 CLAIM LISTING

2 1. (Currently Amended) A communications bus connected between a source node and a  
3 destination node, the communications bus including:

4 (a) a number of alternate transmission paths extending between the source node and  
5 the destination node on a common substrate comprising a semiconductor chip;

6 (b) a source switching arrangement interposed between the source node and the  
7 alternate transmission paths, the source switching arrangement being operable to  
8 selectively connect the source node to a selected one of the alternate transmission  
9 paths and disconnect the source node from each other alternate transmission path;  
10 and

11 (c) a destination switching arrangement interposed between the destination node and  
12 the alternate transmission paths, the destination switching arrangement being  
13 operable to selectively connect the destination node to the selected one of the  
14 alternate transmission paths and disconnect the destination node from each other  
15 alternate transmission path.

16  
17 2. (Original) The communications bus of Claim 1 wherein:

18 (a) the source switching arrangement includes multiple source switching devices, a  
19 different source switching device connected between the source node and each  
20 alternate transmission path; and

21 (b) the destination switching arrangement includes at least one destination switching  
22 device connected between the destination node and each alternate transmission  
23 path.  
24

BEST AVAILABLE COPY

1 3. (Original) The communications bus of Claim 1 wherein:

2 (a) the different source switching devices include at least one multiplexer; and

3 (b) the at least one destination switching device comprises a multiplexer.

4  
5 4. (Original) The communications bus of Claim 1 further including:

6 (a) a source switch control structure for controlling the operation of the source  
7 switching arrangement; and

8 (b) a destination switch control structure for controlling the operation of the  
9 destination switching arrangement.

10  
11 5. (Currently Amended) The communications bus of Claim ~~[[5]]~~ 4 wherein the source  
12 switch control structure and the destination switch control structure each includes a  
13 nonvolatile or volatile memory structure.

14  
15 6. (Original) The communications bus of Claim 1 further including test circuitry connected  
16 to the source node and destination node for applying a test signal to each alternate  
17 transmission path and for monitoring the destination node to determine whether the  
18 respective test signal is properly received at the destination node.

19  
20 7. (Original) The communications bus of Claim 1 wherein:

21 (a) a receive node and first direction control node are associated with the source node,  
22 and a send node and second direction control node are associated with the  
23 destination node;

BEST AVAILABLE COPY

- (b) a send switching arrangement is interposed between the send node and each alternate transmission path;
- (c) a receive switching arrangement is interposed between each alternate transmission path and the receive node;
- (d) a first direction control switching arrangement is interposed between the first direction control node and a control input of a tri-state driver associated with the source node; and
- (e) a second direction control switching arrangement is interposed between the second direction control node and a control input of a tri-state driver associated with the send node.

8. (Original) The communications bus of Claim 1 wherein:

- (a) the communications bus is also connected between a number of additional source nodes and the same number of additional destination nodes;
- (b) a number of additional alternate transmission paths extend between each additional source node and each additional destination node;
- (c) the source switching arrangement is also interposed between each additional source node and the respective alternate transmission paths associated with that respective additional source node, the source switching arrangement also being operable to selectively connect each respective additional source node to a selected one of the additional alternate transmission paths associated with that source node and disconnect each respective additional source node from each

1 other additional alternate transmission path associated with that additional source  
2 node; and

- 3 (c) the destination switching arrangement is also interposed between each additional  
4 destination node and the respective alternate transmission paths associated with  
5 that additional destination node, the destination switching arrangement also being  
6 operable to selectively connect each respective additional destination node to the  
7 selected one of the alternate transmission paths associated with that additional  
8 destination node and disconnect the respective additional destination node from  
9 each other additional alternate transmission path associated with that additional  
10 destination node.

- 11  
12 9. (Original) The communications bus of Claim 8 wherein the source switching  
13 arrangement comprises a number of multiplexers.

- 14  
15 10. (Original) The communications bus of Claim 9 wherein the source node and number of  
16 additional source nodes are arranged side-by-side and wherein at least one pair of  
17 adjacent source nodes in this side-by side arrangement share a common multiplexer  
18 included in the number of multiplexers.

- 19  
20 11. (Original) The communications bus of Claim 8 wherein:

- 21 (a) the source switching arrangement includes a first switching subset connected to a  
22 first subset of the alternate transmission paths;

- 1 (b) the source switching arrangement further includes a second switching subset  
2 connected to a second subset of the alternate transmission paths; and  
3 (c) the alternate transmission paths making up the second subset of alternate  
4 transmission paths are interleaved with the alternate transmission paths making up  
5 the first subset of alternate transmission paths.  
6

7 12. (Original) The communications bus of Claim 8 wherein:

- 8 (a) the source node and each additional source node is associated with a respective  
9 receive node and first direction control node, and the destination node and each  
10 additional destination node are associated with a respective send node and second  
11 direction control node;  
12 (b) a send switching arrangement is interposed between the send nodes and the  
13 alternate transmission paths;  
14 (c) a receive switching arrangement is interposed between the alternate transmission  
15 paths and the receive nodes;  
16 (d) a first direction control switching arrangement is interposed between the first  
17 direction control nodes and a control input of a number of tri-state drivers, each  
18 driver associated with a respective source node; and  
19 (e) a second direction control switching arrangement is interposed between the  
20 second direction control nodes and a control input of a number of additional tri-  
21 state drivers, each additional tri-state driver associated with a respective send  
22 node.  
23

1 13. (Currently Amended) A communications bus connected between a number of source  
2 nodes and an equal number of destination nodes, the communications bus including:

3 (a) a number of alternate transmission paths extending between each respective  
4 source node and a matched one of the destination nodes on a common substrate  
5 comprising a semiconductor chip, the matched destination node being matched to  
6 a respective one of the source nodes;

7 (b) a source switching arrangement, the source switching arrangement being  
8 interposed between each respective source node and the respective alternate  
9 transmission paths associated with that respective source node, the source  
10 switching arrangement also being operable to selectively connect each respective  
11 source node to a selected one of the alternate transmission paths associated with  
12 that source node and disconnect each respective source node from each other  
13 alternate transmission path associated with that source node; and

14 (c) a destination switching arrangement, the destination switching arrangement being  
15 interposed between each respective destination node and the respective alternate  
16 transmission paths associated with that respective destination node, the  
17 destination switching arrangement also being operable to selectively connect each  
18 respective destination node to the selected one of the alternate transmission paths  
19 associated with that destination node and disconnect the respective destination  
20 node from each other alternate transmission path associated with that destination  
21 node.  
22

1 14. (Original) The communications bus of Claim 13 wherein the source switching  
2 arrangement comprises a number of multiplexers.

3  
4 15. (Original) The communications bus of Claim 14 wherein the source nodes are arranged  
5 side-by-side and wherein at least one pair of adjacent source nodes in this side-by side  
6 arrangement share a common multiplexer included in the number of multiplexers.

7  
8 16. (Original) The communications bus of Claim 13 wherein:

- 9 (a) the source switching arrangement includes a first switching subset connected to a  
10 first subset of the alternate transmission paths;  
11 (b) the source switching arrangement further includes a second switching subset  
12 connected to a second subset of the alternate transmission paths; and  
13 (c) the alternate transmission paths making up the second subset of alternate  
14 transmission paths are interleaved with the alternate transmission paths making up  
15 the first subset of alternate transmission paths.

16  
17  
18 17. (Original) The communications bus of Claim 13 wherein:

- 19 (a) each source node is associated with a respective receive node and first direction  
20 control node, and each destination node is associated with a respective send node  
21 and second direction control node;  
22 (b) a send switching arrangement is interposed between the send nodes and the  
23 alternate transmission paths;

(c) a receive switching arrangement is interposed between the alternate transmission paths and the receive nodes;

(d) a first direction control switching arrangement is interposed between the first direction control nodes and a control input of a number of tri-state drivers, each driver associated with a respective source node; and

(e) a second direction control switching arrangement is interposed between the second direction control nodes and a control input of a number of additional tri-state drivers, each additional tri-state driver associated with a respective send node.

18. (Currently Amended) A method for compensating for errors in a communications bus between a source node and a destination node, the bus including alternate transmission paths between the source and destination node on a common substrate, the method including the steps of:

(a) applying a test signal to a first one of the alternate transmission paths between the source node and the destination node;

(b) determining whether the test signal is properly received at the destination node; and

(c) if the test signal is not properly received at the destination node, switching to a second one of the alternate transmission paths between the source node and destination node.

19. (Original) The method of Claim 18 further including the steps of:



- 1 (a) applying a second test signal to the second one of the alternate transmission paths  
2 between the source node and the destination node; and  
3 (b) determining whether the second test signal is properly received at the destination  
4 node.

5  
6 20. (Original) The method of Claim 18 wherein the communications bus extends between a  
7 number of source nodes and a like number of destination nodes, and the bus includes a  
8 number of alternate transmission paths between each source node and a respective one of  
9 the destination nodes, and wherein the method further includes:

- 10 (a) applying a respective test signal to each alternate transmission path between each  
11 respective source node and its respective destination node;  
12 (b) determining whether each respective test signal is properly received at the  
13 respective destination node; and  
14 (c) for each respective test signal that is not properly received at the respective  
15 destination node, switching the respective source node to a different one of the  
16 alternate transmission paths between the respective source node and destination  
17 node.

18  
19 21. (Original) The method of Claim 20 wherein the step of switching the respective source  
20 node to a different one of the alternate transmission paths between the respective source  
21 node and destination node includes applying a control signal to a switching device  
22 interposed between the source node and the alternate transmission paths associated with  
23 the respective source node.

- 1 22. (Original) The method of Claim 21 wherein each control signal is applied from a  
2 memory device associated with the communications bus.